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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,980	07/25/2003	Helmut Laig-Hoerstebroek	054821-0863	4136
26371	7590	07/22/2005	EXAMINER	
FOLEY & LARDNER 777 EAST WISCONSIN AVENUE SUITE 3800 MILWAUKEE, WI 53202-5308			TIBBITS, PIA FLORENCE	
			ART UNIT	PAPER NUMBER
			2838	

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/626,980

Applicant(s)

LAIG-HOERSTEBROCK ET AL.

Examiner

Pia F. Tibbits

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/11/2005</u> . | 6) <input checked="" type="checkbox"/> Other: <u>amended fig. 1</u> . |

DETAILED ACTION

This Office action is in answer to the amendment filed 4/11/2005. Claims 1-17 are pending, of which claims 2, 4 and 11 were amended.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the conventional names, as described in the specification, e.g. vehicle, motor, temperature measurement means, etc. for the elements shown in fig.1 with non-conventional symbols. Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Art Rejection Rationale

2. At the outset, the examiner notes that claims are to be given their broadest reasonable interpretation in light of the supporting disclosure. *In re Zletz*, 893 F.2d 319, 321, 13 USPQ 2d 1320, 1322 (Fed. Cir. 1989); *In re Prater*, 415 F.2d 1393, 1404, 162 USPQ 541, 550 (CCPA 1969); *In re Yamamoto*, 740 F.2d 1569, 222 USPQ 934 (Fed. Cir. 1984); *Burlington Indus. V. Quigg*, 822 F.2d 1581, 3 USPQ 2d 1436 (Fed. Cir. 1987); *In re Morris*, 43 USPQ 2d 1753, 1756 (Fed. Cir. 1997). ("During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow.... The reason is simply that during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed.... An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process."). In responding to this Office action, applicants are reminded of the requirements of 37 CFR 1.111 and 1.119 that applicants specifically point out the specific distinctions believed to render the

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claims patentable over the references in presenting responsive arguments. See MPEP 714.02. The support of any amendments made should also be specifically pointed out. See MPEP 2163.06.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Galbraith et al.** [hereinafter Galbraith] in view prior art disclosed by applicant, **DE-19540827** [hereinafter DE].

As to claim 16, Galbraith discloses in figures 1A-2 a storage battery comprising: temperature measurement means 102; and computation means 102 for calculating a wear variable of the storage battery; wherein the computation means is configured to calculate the wear variable as a function of measured battery temperature using a method comprising: determining the temperature of a battery; and determining a wear variable over time as a function of the battery temperature; wherein the wear variable is determined as a sum of temperature-dependent wear contributions over time, with the values of the wear contributions rising more than proportionally as the battery temperature rises [see figures 1A and 1B; column 2, lines 53-67; column 3, lines 1-26; column 4, table 1]. Galbraith does not disclose a motor vehicle, and wherein the wear variable is determined as a sum of temperature-dependent wear contributions over time, with the values of the wear contributions rising more than proportionally as the battery temperature rises.

As to the storage battery being part of a motor vehicle: Galbraith discloses that batteries suffer from poor battery service life in hot operating environments (e.g., above 36°C) [see column 1, lines 32-33], and that the invention allows for an accurate estimate of battery life regardless of the operating environment temperature [see column 3, line 25]. With regard to the recitation that "storage battery for

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motor vehicles", it has been held that a recitation with respect to the manner or method in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. See *Ex parte Wikdahl*, 10 USPQ2d 1546, 1548 (Bd. Pat. App. & Inter. 1989); *Ex parte Masham*, 2 USPQ2d 1647, 1648 (Bd. Pat. App. & Inter. 1987); *In re Casey*, 370 F.2d 576, 152 USPQ 235, 238 (CCPA 1967); see also M.P.E.P. § 2111.02. A process or environment of use limitation in an apparatus claim will not patentably distinguish the claim from the prior art unless it somehow imposes a structural limitation." [I]ntended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art." **M.P.E.P. § 2111.02** (citing *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). A claim preamble has the import that the claim as a whole suggests for it. Where the claim preamble is used to recite structural limitations of the claimed invention, the PTO and courts give effect to that usage. Conversely, where a structurally complete invention in the claim body is defined and uses the preamble only to state a purpose or intended use for the invention, the preamble is not a claim limitation. The determination of whether preamble recitations are structural limitations or mere statements of purpose or use can be resolved only on review of the entire patent in order to gain an understanding of the inventions and the claims. *Rowe v. Dror*, 42 USPQ2d 1550 (Fed. Cir. 1997).

DE discloses in the abstract the determined aging parts of a battery are summed up, to form a battery aging value/wear variable as a measure for the battery aging condition. The useful end of the battery life is defined as the reaching of a normal battery aging value, which is standardized as a working life duration. A specified percent amount, which is no longer available as power from the battery, is obtained empirically from a specified graph. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Galbraith's apparatus and include DE's teachings to sum up the determined aging parts and determine a wear variable as a function of the battery temperature over time, in order to empirically determine the specified percent amount no longer available as power from the battery.

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As to claim 17, see remarks and references for claim 16 above.

As to the method claims 1, 3, 6, 10-15, see remarks and references for claim 16 above: the method steps will be met during the normal operation of the apparatus described above.

As to claims 2, 7-9, Galbraith and DE disclose using a mathematical model to empirically determine the specified percent amount no longer available as power from the battery. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine all the variables involved in determining the wear variable as a function of the battery temperature in one equation, since it is very well known in the art to do so in order to define a particular process by performing routine derivations of very well known equations.

5. Claims 1, 16, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP-9253539** [hereinafter JP] in view prior art disclosed by applicant, **DE-19540827** [hereinafter DE].

As to claim 16, JP discloses in the abstract a storage battery 112 comprising: temperature measurement means IC₁; and computation means 31 for calculating a wear variable of the storage battery; wherein the computation means is configured to calculate the wear variable as a function of measured battery temperature using a method comprising: determining the temperature of a battery; and determining a wear variable over time as a function of the battery temperature. JP does not disclose a motor vehicle, and wherein the wear variable is determined as a sum of temperature-dependent wear contributions over time, with the values of the wear contributions rising more than proportionally as the battery temperature rises.

As to the storage battery being part of a motor vehicle: Galbraith discloses that batteries suffer from poor battery service life in hot operating environments (e.g., above 36°C) [see column 1, lines 32-33], and that the invention allows for an accurate estimate of battery life regardless of the operating environment temperature [see column 3, line 25]. With regard to the recitation that "storage battery for motor vehicles", it has been held that a recitation with respect to the manner or method in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. See *Ex parte Wikdahl*, 10 USPQ2d 1546,

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1548 (Bd. Pat. App. & Inter. 1989); *Ex parte Masham*, 2 USPQ2d 1647, 1648 (Bd. Pat. App. & Inter. 1987); *In re Casey*, 370 F.2d 576, 152 USPQ 235, 238 (CCPA 1967); see also M.P.E.P. § 2111.02. A process or environment of use limitation in an apparatus claim will not patentably distinguish the claim from the prior art unless it somehow imposes a structural limitation." [I]ntended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art." **M.P.E.P. § 2111.02** (citing *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963)). A claim preamble has the import that the claim as a whole suggests for it. Where the claim preamble is used to recite structural limitations of the claimed invention, the PTO and courts give effect to that usage. Conversely, where a structurally complete invention in the claim body is defined and uses the preamble only to state a purpose or intended use for the invention, the preamble is not a claim limitation. The determination of whether preamble recitations are structural limitations or mere statements of purpose or use can be resolved only on review of the entire patent in order to gain an understanding of the inventions and the claims. *Rowe v. Dror*, 42 USPQ2d 1550 (Fed. Cir. 1997).

DE discloses in the abstract the determined aging parts of a battery are summed up, to form a battery aging value/wear variable as a measure for the battery aging condition. The useful end of the battery life is defined as the reaching of a normal battery aging value, which is standardized as a working life duration. A specified percent amount, which is no longer available as power from the battery, is obtained empirically from a specified graph. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify JP's apparatus and include DE's teachings to sum up the determined aging parts and determine a wear variable as a function of the battery temperature over time, in order to empirically determine the specified percent amount no longer available as power from the battery.

As to claim 17, see remarks and references for claim 16 above.

As to the method claim 1, see remarks and references for claim 16 above: the method steps will be met during the normal operation of the apparatus described above.

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6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Information Disclosure Statement

7. The information disclosure statements filed 9/17/2004, and 10/5/2004 fail to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of non-patent literature documents A139 and A140 that are not in the English language. They have been placed in the application file, but the information referred to therein has not been considered. The numerous references and materials listed on the submitted 8 sheets of the IDS's make it difficult to determine whether or not any of the references, or parts of the references, are material to applicants' claimed invention. It is noted that applicants, in their several IDS submissions, do not indicate any particular reference or parts of references which they deem "material" to the patentability of the pending claims under 37 CFR 1.56(b). Applicants are reminded of the standard set forth in the leading inequitable conduct case of ***J.P. Stevens & Co. F. Lex Tex Ltd.***, 747 F.2d 1553, 223 USPQ 1089 (Nov. 9, 1984), cert. denied, 106 S. Ct. 73 (1985): Where none of the prior art cited during prosecution teaches a key element of the claims and where a reference known to the applicants does, the applicants should know that reference is "material". Thus, if applicants are aware of any cited reference from among the information disclosure(s) of paper number 6 that are "material," applicants should make that reference known to the examiner. It is also noted that a "misrepresentation is material if it makes it impossible for the Patent Office to fairly assess (the patent) application against the prevailing statutory criteria." ***In re***

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Multidistrict - Litig. Involving Forst Patent, 540 F.2d 601, 604, 191 USPQ 241 , 243 (3d Cir. 1976)*, see also **Monsanto Co. 7. Rohm & Haas Co.**, 456 F.2d 592, 600, 172 USPQ 323, 329 (3d Cir.), cert. denied, 407 U.S. 934, 174 USPQ 129 (1972). And, the submission of voluminous documents in the instant information disclosure statements (here, in excess of 150 documents) make it difficult, and likely impossible, for the Patent Office to fairly assess applicants' application against the prevailing statutory criteria.

Response to Arguments

8. Applicant's arguments with respect to the claims have been considered but are moot in view of the new grounds of rejection.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Prior art disclosed by applicant: "**Bosch and the new E-class**" discloses the E-class Electronic Battery Management measures temperature, voltage, as well as energy flow to determine battery state-of-health and state-of-charge, and predicts the expected state-of-charge based on a charge profile continuously adapted to the changing conditions of the on-board network; **WO 01/15023** discloses a modularized battery model using software code which simulates the performance of real battery, i.e., physical properties, chemical properties, charge and discharge rates, temperature, and history of usage of the rechargeable cells; **DE-3334128** discloses a method and circuit arrangement for determining the state of a vehicle battery by using influencing variables of the battery which are important during travel mode, namely the temperature, age and self-discharging of the battery, are taken into account **additively** during the determination of the remaining discharge time; **DE-19952693** discloses a procedure for determining a battery condition in which the battery charge, temperature, charging current, discharging current and charging current are measured, and are then used to determine battery state or condition. The device for determining the battery condition includes several sensors used to measure charge, temperature, charging current, discharging current in conjunction with an analysis circuit that processes the measurement values from the sensors. **WO-8901169** discloses using a Kalman filter to linearize

non-linear systems and update the SOC estimate [see pages 6, 7, 12]. The prior art cited in PTO-892 and not mentioned above disclose related apparatus: **Morimoto** [6828798] discloses a vehicle battery ECU monitors the operating conditions of the battery pack modules based on the charge/discharge current and voltage of the battery pack modules, the voltage and temperature of each battery module, and the temperature of the battery pack modules, all of which are detected by the current, the voltage and the temperature sensors, in order to compute the **SOC (State of Charge)**, that is the amount of charge accumulated relative to the **battery capacity**, based on the voltages, currents, and temperatures detected, requiring a vehicle ECU serving as a vehicle controller to provide such a charge and discharge state so as to maintain the SOC at an appropriate state. The data on the voltage, current, and temperature as well as the computed SOC are delivered to the vehicle ECU as information on the operating condition. **Tate et al.** [6441586] discloses a method of optimizing a SOC estimation by using a Kalman Filter to linearize non-linear systems and update the SOC estimate [see also column 3, lines 18-30; column 11, lines 63-65; column 12, lines 16-21; column 14, lines 33-51]. **Notten et al.** [6016047] discloses a battery management system 100 comprises input means 102 for receiving input signals, such as current or voltage, which represent a physical quantity of a battery. In operation, processing means 105 of the battery management system 100 calculate a physical quantity of the battery, such as the State of Charge, based on the input signals by using an electrochemical/physical model of the battery. The model includes a representation of a main electrochemical storage reaction, whose behaviour is calculated in dependence on a battery temperature. The processing means 105 calculates the battery temperature based on a temperature model of a temperature development in the battery. The battery management system 100 comprises output means 104 for outputting an output signal, which is derived from a state of the electrochemical storage reaction. The battery management system 100 is used in a smart battery 10 or a battery charger/discharger 200. The model is also used in a battery simulator. **Wiley et al.** [6031354] discloses an on-line battery management and monitoring system and method for monitoring a plurality of battery cells identifies and computes individual cell and battery bank operating parameters.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Pia Tibbits whose telephone number is (571) 272-2086. If unavailable, contact the Supervisory Patent Examiner Mike Sherry whose telephone number is (571) 272-2084. The Technology Center Fax number is (703) 872-9306.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PFT

July 19, 2005

Pia Tibbits

Primary Patent Examiner

APPROVED WITH
COMMENTS 7/19/05
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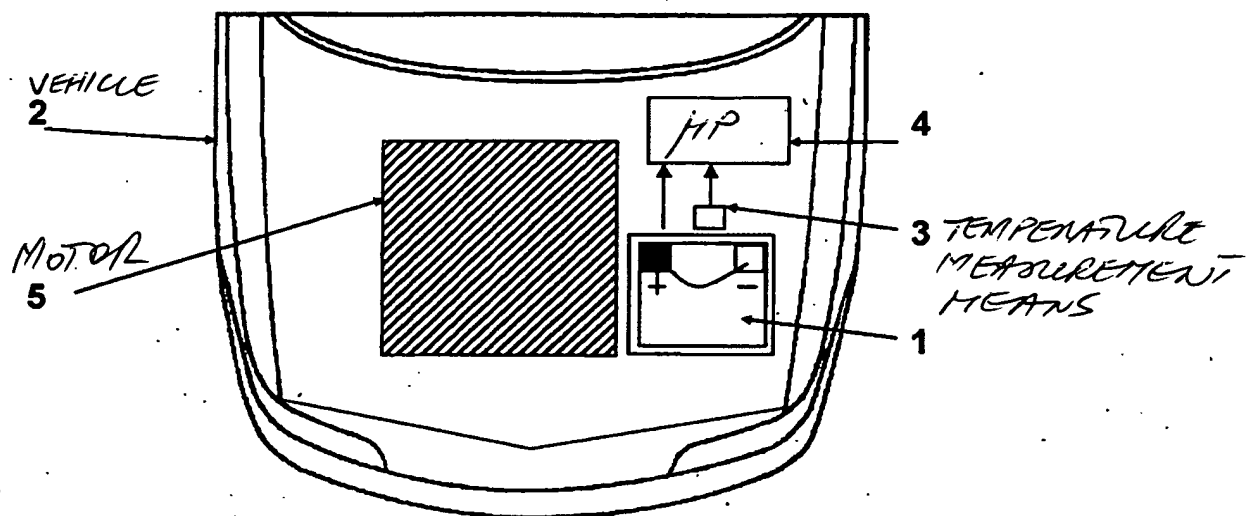


Fig. 1